

# Medical Science

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# Binge Eating Disorder and Loss-of-control Eating following bariatric surgery: An update on research

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## ABSTRACT

Bariatric surgery remains a leading treatment for obesity due to its effectiveness in reducing food intake. However, outcomes may be influenced by various factors, and some patients fail to achieve desired weight reduction. Binge eating disorders or loss of control eating are the subject of interest as there is growing evidence indicating their impact on surgery outcomes. This paper aims to compare recent findings with the existing reviews on eating pathologies in patients undergoing bariatric surgery and summarize the newest discoveries addressing this topic. As patients continue to experience suboptimal weight loss or significant weight regain, there is a growing need to understand the underlying mechanisms of this process better. The comparison of previous reviews and recent findings underscores that greater emphasis should be placed on long-term observation alongside standard pre-surgery preparation. With new medical phenomena emerging, such as nibbling, grazing, and picking, clarification and unification of diagnostic processes should be the aim of future research. All researchers agree that self-monitoring plays a vital role in the post-surgery period. It should be considered a gold standard in all patients undergoing bariatric surgery, enabling the prompt addressing of the needs as they arise.

**Keywords:** Bariatric surgery, binge eating disorder, loss-of-control eating

## 1. INTRODUCTION

Overweight, defined as BMI > 25kg/m<sup>2</sup>, and obesity, defined as BMI > 30kg/m<sup>2</sup>, have been proven to be associated with a higher incidence of various conditions such as hypertension, cardiovascular diseases, diabetes mellitus, renal and liver

failure, mental disorders, and countless other complications. Obesity has been associated with numerous prevalent cancers, such as breast, colorectal, esophageal, kidney, gallbladder, uterine, pancreatic, and liver cancer. The number of obese people has tripled since 1975, and this concern is no longer affecting only developed countries but all nations worldwide. Overweight and obesity are diagnosed among around 40% of the global population. According to the World Obesity Federation, this number is expected to grow to over 50% by 2035.

Currently, obesity alone affects approximately 15% of the population and is estimated to reach even 24% by 2035, impacting nearly 2 billion people, including adults, adolescents, and children. It is worth noting that the most rapid increase in obesity cases is expected among boys and girls – between 2020 and 2035, the percentage of obese children is expected to double, rising from 10% to 20% for boys and from 8% to 18% for girls (Lobstein et al., 2023). Bariatric surgery continues to stand out as the most effective obesity treatment (Courcoulas et al., 2018). According to data from the International Federation for the Surgery of Obesity and Metabolic Disorders, in 2023, approximately 600,000 such surgeries were performed worldwide (Brown et al., 2023). Weight loss, if maintained, can result mitigate adverse obesity-related comorbidities, thus contributing to prolonging life (Hassapidou et al., 2023; Obeso-Fernández et al., 2023).

However, beyond the surgery itself, many other factors can influence the outcome for patients (Noria et al., 2023; O'Brien et al., 2019; Athanasiadis et al., 2021). One of the obstacles patients have to battle are eating disorders, affecting both pre- and post-surgery period (Law et al., 2023). The most common ones are thought to be maladaptive or dysregulated eating (Kloock et al., 2023). Especially the former and its subtypes – binge eating disorder (BED) and loss-of-control eating (LOCE) – are responsible for poor weight loss results. Poor adherence to post-surgery medical recommendations is the reason why most bariatric programs oblige their participants to undergo a mental health evaluation process before the surgery (Sarwer and Heinberg, 2020). Unfortunately, little to no effort is taken to prevent those dysfunctional eating patterns from manifesting in the months following the procedure.

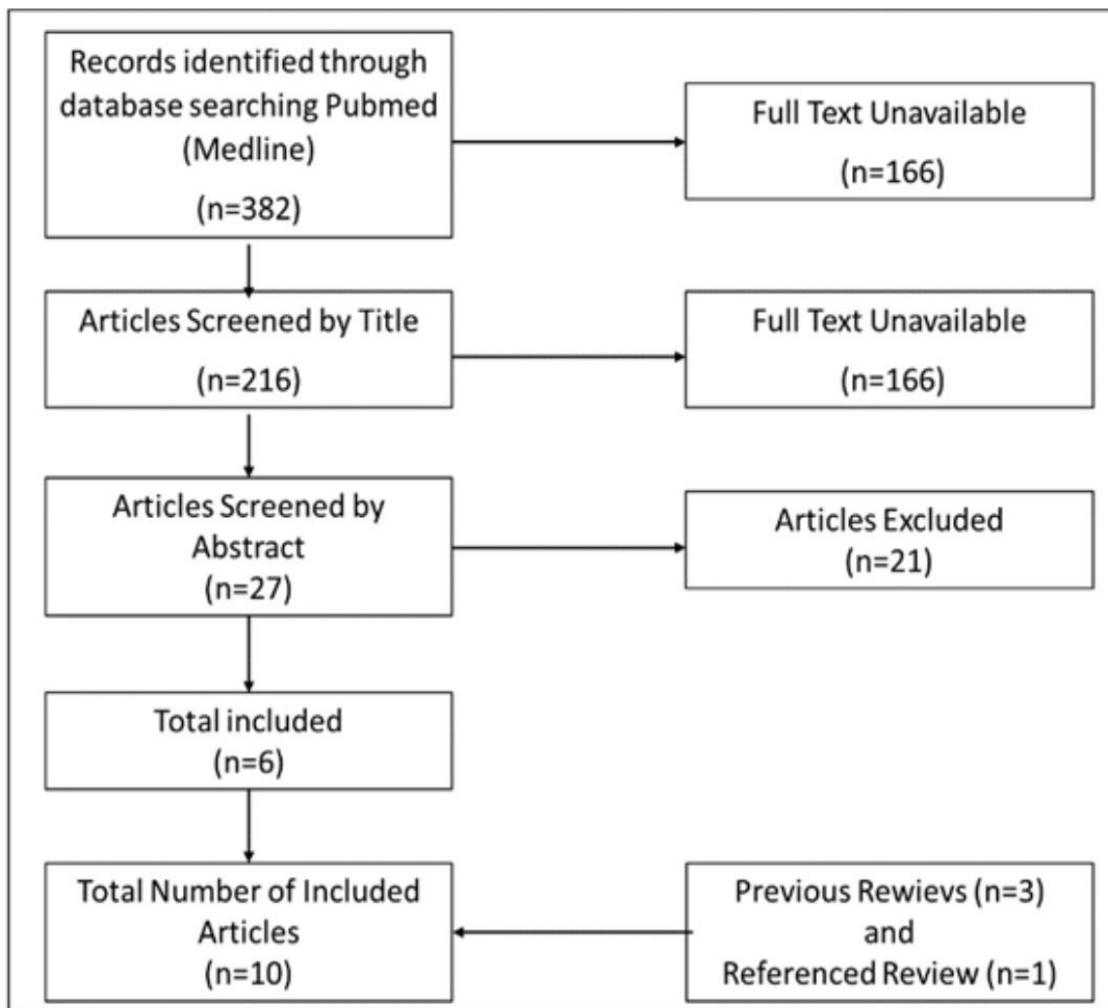
It is particularly disconcerting, considering that there is a positive correlation between postoperative eating disinhibition and weight regain (Athanasiadis et al., 2021). Binge eating disorder is widely understood that BED is the most prevalent eating disorder occurring prior to surgery, with an incidence of 4-49% (Niego et al., 2007; Opozda et al., 2016). Loss-of-control eating, as defined in DSM-V, is the inability to control what or how much one eats, regardless of the amount of food consumed. Since, after bariatric surgery, ingestion of objectively large amounts of food is limited by new gastric capacity, LOCE is sometimes used in place of BED to better depict the pathological behavior. Evidence shows that up to 39% of patients develop LOCE within two years post-surgery (White et al., 2010).

## 2. METHOD

This review aimed to consolidate information obtained by previous reviews Opozda et al., (2016), Williams-Kerver et al., (2019), Taba et al., (2021) with a comparison to new articles covering the topic of bariatric surgery and eating disorders. Studies were eligible for inclusion, if they reported mainly on LOCE and BED, both before and after the surgery, and their relation to post-surgery weight outcomes. Studies aiming for systematizing post-surgery recommendations and diagnostic criteria were included. Only studies including adult participants were included. The MEDLINE database was searched via the Pubmed interface up to 30 January 2024. The keywords were (eating) AND (disorder) AND (bariatric) into the database screening only for articles published in the last five years.

## 3. RESULTS

Out of 382 results, 166 were excluded due to a lack of full articles available. The remaining 216 were screened by the title. Of this, 27 articles covering the topic were evaluated by reading the abstract, then only six studies Allison et al., (2023), Furtado et al., (2023), Lydecker et al., (2019), Ivezaj et al., (2021), Sarwer et al., (2021), Conceição and Goldschmid, (2019) were included, apart from previously mentioned reviews. Additionally, one referenced review was included (Meany et al., 2014). The study selection is shown in (Figure 1). The post-surgical follow-up period ranged from 6 months to 7 years, with final assessment after 12 months in most cases. The results of each latest study are presented in (Table 1).

**Figure 1** Study selection flow diagram**Table 1** Recent findings in post-bariatric eating disorders

Authors, year	Sample Size	BED	LOCE	Other findings	Methods
Conceição et al., (2015)	-	-	-	Researchers recommend standardizing diagnostic schemes and assessment tools	-
Furtado et al., (2023)	217	Preoperative BED was present in 19 patients; within two years after the surgery there were 54 individuals screened positive for BED	-	Individuals with BED were 2 times more likely to regain >15% of weight after the surgery	BED, HADS

Ivezaj et al., (2021)	-	-	-	Researchers aimed to compare questionnaires used to assess eating disorders	EDE-BSV, BES, EDDS, EDI, NEQ
-	268 at the start, 186 completed full follow-up	28/268 with history of BED, including 18 who met BED criteria currently. After 12 months, there were no new cases, and only 6/28 met the criteria for BED	-	Patients with subjective binge eating episodes experienced more significant weight loss by 4,1%	SCID-5-RV, EDE-BSV
Lydecker et al., (2021)	168, only with reported LOCE	71 met bariatric BED criteria, and 97 met subthreshold bariatric BED criteria	All 168 reported regular LOCE in 6 months after the surgery	The study also aimed to examine secretive eating – 36,9% (62/168) reported this disorder	EDE-BSV, BDI-II
Sarwer et al., (2021)	300	27 met diagnostic criteria	It was not the focus of the study; however, many reported a feeling of LOCE	Study provides evidence for a coincidence of obesity with other psychiatric disorders	SCID-5-RV, BDI-II, NEQ

Table 1 - SCID-5-RV – Structured Clinical Interview for the DSM-5 Research Version, EDE-BSV – Eating Disorder Examination – Bariatric Surgery Version, BES - Binge-Eating Depression Scale, HADS - Hospital Depression Scale, BDI-II – Beck Depression Inventory-II, BES – Binge Eating Scale, EDDS – Eating Disorder Diagnostic Scale, EDI – Eating Disorder Inventory, NEQ – Night Eating Questionnaire

## 4. DISCUSSION

### Eating pathology before and after surgery

Binge eating disorder remains the second most common psychiatric disorder in the bariatric population after major depressive disorder (Sarwer et al., 2004). It is characterized by recurrent overeating with the absence of any compensatory weight reduction strategies (e.g., excessive exercises or self-induced vomiting). The sense of lack of control over eating during the episode is also mandatory. Previous research shows that BED prevalence was highest before the surgery (12,7%), with the most significant decrease in the first year (Smith et al., 2019). BED examination post-surgery continues to pose a difficulty as most patients are unable to eat “an amount of food that is definitely larger than most people would eat in a similar period”, as stated in DSM-V, due to the limited capacity of the gastric pouch or sleeve, (Meany et al., 2014). The newest research emphasizes this diagnostic flaw by suggesting that researchers should adjust the criteria, thus objectifying “a large portion of food” for patients to meet the diagnostic requirements.

As such, within bariatric surgery literature, this phenomenon is frequently referred to as subjective binge eating (SBE) Conceição et al., (2015), Goldschmidt et al., (2016) and might be the explanation for why studies show the sudden decline in the prevalence of BED in the first months during post-surgery observation, only for this value to then rise in the following years (Smith et al., 2019). The concept of ‘loss of control eating’ (LOCE) emerged as a primary focus of interest, with a prevalence of 35% before surgery (Smith et al., 2019). The term LOCE is now being used at times instead of BED because of the latter limitations. There have also been suggestions that it is a better indicator of psychopathology – the severity of the loss of control episode corresponds with psychological impairment (Ivezaj et

al., 2018; Goldschmidt, 2017). Lydecker et al., (2019) conducted a study exclusively on patients affected by LOCE Furtado et al., (2023) that showed a co-occurrence with other eating disorders – secretive eating.

This phenomenon became a common form of post-surgery behavior, given the stigma of bariatric surgery combined with strict dietary regulations (Phelan, 2018). Additionally, among this group, body dissatisfaction was higher, even compared to those meeting the criteria for BED. However, it was less related to weight regain than those who do not report secretive eating. Both BED and LOCE remain monitored (Table 1) by researchers to identify risk factors for poor weight loss and weight regain after surgery. Previous reviews stated that, essentially, eating disorders *before* surgery are inconclusive prognostics of weight loss and adherence to post-surgery recommendations (Williams-Kerver et al., 2019; Taba et al., 2021). In contrast, there is an increasing number of studies backing the observation that eating pathology *after* the surgery correlates positively with weight regain (Sarwer et al., 2004).

Another concerning topic is the occurrence of other unclassified eating pathologies – grazing, picking, nibbling, eating in the absence of hunger or beyond satiety, or even excessive dietary restrictions (Ivezaj et al., 2021; Conceição and Goldschmidt, 2019). Bariatric surgery literature suggests that currently used questionnaires such as Eating Disorder Examination – Bariatric Surgery Version (EDE-BSV) or Eating Disorder Diagnostic Scale (EDDS) may not be efficient diagnostic tools to diagnose and distinguish between them properly. Additional research is required in this field to understand the importance of formerly mentioned phenomena better; currently used methods lack consensus, and utilizing consistent definitions and assessment methodologies in future studies should be prioritized.

## 5. CONCLUSION

Collectively, the latest research remains consistent with previous reviews. Among the diverse group of individuals, with different approaches conducted by each study, problematic eating behaviors were associated with poorer adherence to weight loss and quicker weight regain. Undeniable effects of both BED and LOCE in this population, especially post-surgery, can significantly affect the results of bariatric surgery. Future studies may add to bariatric surgery literature by using consistent terminology and definitions when referring to various eating pathologies. Nonetheless, the factors contributing to successful outcomes are complex, and additional research is needed to improve our understanding of emerging complications. For example, long-term medical observation consisting of self-monitoring of weight and food intake combined with professional assessment would help screen patients as their condition worsens.

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### Author's contribution

Jan Kościan: Project administration, Supervision  
Aleksander Górný: Conceptualization, Investigation  
Justyna Chwiejczak: Methodology, Investigation  
Michał Obrębski: Data Curation, Formal analysis  
Anna Seroka: Resources, Visualization  
Karolina Szczerkowska: Resources, Visualization  
Maria Mitkowska: Writing – Original Draft  
Anna Wójcik: Writing – Review & Editing  
Julita Mlynarska: Formal analysis  
Maria Rybicka: Writing – Review & Editing  
Zuzanna Dryżałowska: Writing – Review & Editing

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**Informed consent**

Not applicable.

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**Conflict of interest**

The authors declare that there is no conflict of interests.

**Data and materials availability**

All data sets collected during this study are available upon reasonable request from the corresponding author.

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